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marked gains almost without exception. Thus 1913 was the banner year for cement, which gains more than 11 per cent. over 1912, and record outputs are also shown for lime, building sand and gravel, sand-lime brick and glass sand. Other mineral products for which 1913 was a record-breaking year, are bauxite and aluminum, sulphuric acid, feldspar, mica, pottery, and talc and soapstone, while substantial increases are reported for gypsum, phosphate rock, abrasives, barytes, slate and salt. These production figures all express well-maintained activity in mines, smelter, furnace and mill, and prove that the American people are utilizing more of the nation's great natural resources than ever before. A few weeks later when figures are at hand for all of the mineral products, it is expected that 1913 will be found to have overtopped both 1912 and 1907 which have hitherto held the record.

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#### UNIVERSITY AND EDUCATIONAL NEWS

MR. ASA G. CHANDLER has given \$1,000,000 and citizens of Atlanta have guaranteed \$500,000 for the establishment of an Atlanta University, under the auspices of the Methodist Church. It is said that a theological school will be the first to be opened.

BOWDOIN COLLEGE has received a gift of \$15,000 from the estate of Dr. Frank Hartley, of New York, to establish a scholarship fund as a memorial to the testator's father, John Fairfield Hartley, of the class of 1829.

THE following changes take effect in the botanical department of the Michigan Agricultural College, September 1: Mr. E. F. Woodcock, of the botanical department of West Virginia University, has been appointed instructor in botany to succeed Dr. R. F. Allen, who has recently accepted a similar position at Wellesley. Professor H. T. Darlington, of Washington State College, has been appointed assistant professor of botany and will have especial charge of the botanical garden and herbarium. An industrial fellowship in cucumber diseases has been established by the H. J. Heinz Pickle Company, and is filled by Mr.

S. P. Doolittle, who graduated from the institution this year.

IN the law department of Tulane University of Louisiana, Mr. C. P. Fenner, professor of Louisiana practise and acting professor of civil law, has been appointed dean of the department to succeed Mr. D. O. McGovney, who has been called to the University of Missouri.

DR. NATHAN FASTEN, Ph.D. (Wisconsin), has been appointed instructor in zoology at the University of Washington, Seattle.

MR. FREDERICK SODDY, lecturer in physical chemistry in the University of Glasgow, has been appointed to the chair of chemistry at the University of Aberdeen, in succession to Professor F. R. Japp.

PROFESSOR J. S. MACDONALD, professor of physiology in the University of Sheffield since 1903, has been appointed Holt professor of physiology in the University of Liverpool, in succession to Professor C. S. Sherrington.

MR. G. N. WATSON, M.A., fellow of Trinity College, Cambridge, has been appointed a member of the staff of the department of pure mathematics at University College, London, for the next year to fill the vacancy created by the resignation of Dr. A. N. Whitehead.

MR. T. B. JOHNSTON, M.B., lecturer on anatomy in the University of Edinburgh, has been appointed to the newly-created office of lecturer and demonstrator in anatomy at University College, London.

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#### DISCUSSION AND CORRESPONDENCE

##### THE PROBLEM OF GRAVITY

TO THE EDITOR OF SCIENCE: Some recent public utterances from sources that command attention and respect in the scientific world as well as among the general public illustrate rather forcibly the crude and confused state of thought on this subject that continues to prevail up to the present day. These also suggest that the ordinary and obscure thinker need not be deterred from attempting a contribution that may possibly be helpful by the feeling of greatly superior attainments in this

direction by the recognized giants of science. It is axiomatic that a clear conception of what a problem really *is* is a prerequisite to its successful solution. I ask to be permitted to offer the following enunciation:

Neither a quest for an "explanation" of the cause or nature of gravity, on the one hand, nor a mere non-logical acceptance of the fact as a matter of belief or blind faith, on the other, but *the evolutionary development in the minds of men of a scientific satisfaction not only with not knowing but with not ever being able to find out* any rational and consistent theory or explanation for the attraction influence among all portions of matter which is called *gravity* and which is the essential, universal and unalterable attribute of all material things whatsoever.

Obviously such a conception involves rather more of philosophy and psychology than of so-called physical science.

JOHN MILLIS

#### A SIMPLE METHOD FOR FILLING AN OSMOMETER

In setting up the type of apparatus ordinarily used in elementary classes to demonstrate osmosis, the thistle-tube is filled with molasses or strong sugar solution. If this is done before the membrane is tied on, the apparatus becomes sticky and the difficulty increased. If, on the other hand, the tube is filled after the membrane is secure, it is very difficult to force the liquid down the narrow stem.

For the last two years I have found the following to be a simple and effective method for filling the tube. Take a perfectly dry thistle-tube, fill it with dry granulated sugar to the flare at the top, and then tie on the wet membrane with a waxed thread. When the tube is inverted the sugar will fill the bulb. With the solution of the lowest layer of sugar in the water of the membrane, the osmotic action is started and the liquid rises in the tube. First observations may be taken when a saturated solution has been formed and no dry sugar remains.

LAETITIA M. SNOW

WELLESLEY COLLEGE

#### QUOTATIONS

##### THE PROPOSED UNION OF SCIENTIFIC WORKERS

WE continue to receive replies to our notice regarding the emoluments of scientific workers; and they emphasize the opinions which have already been expressed in the leading article of the April number of this *Quarterly*. For example, one worker, a London graduate with first-class honors, who has published original research work and is now a demonstrator working two or three days a week, and who also gives two courses of post-graduate lectures with demonstrations, and does other work, receives the generous salary of fifty pounds per annum—much less than most unskilled laborers will work for. We hear that in one British university, out of two hundred members of the junior staff in all departments (that is all members of the teaching staff who are not full professors), not more than six receive a stipend greater than two hundred and fifty pounds a year. There appears also to be some fear amongst junior staff workers that if they divulge particulars of their salaries they will lose their posts; and in one case we are informed that some highly specialized workers seem even to have lost the ambition ever to earn a reasonable wage. In addition to the poorness of the pay, complaints are made regarding the entire absence of any provision for adequate pension and also regarding the state of serfdom in which men of science are kept under boards and committees composed of persons who frequently have no qualifications for the exercise of such authority. The whole picture is a melancholy not to say a disgraceful one for so wealthy a country, which also imagines that it possesses the hegemony of the world. On the other hand, much sympathy is expressed on behalf of any endeavors that may be made to remedy these evils, and men of science appear to be awakening to the fact that they should attempt some combined effort in this direction. We note especially an excellent article on the "Income and Prospects of the Mathematical Specialist," by Professor G. H. Bryan, F.R.S., in the April number of the *Cornhill Magazine*, and an admirable lecture on the "Place of Science in Modern